

Number, percent, and rate of fatal occupational injuries by worker characteristics, occupation, and industry, 1999

Characteristic	Fatalities		Employed ¹ (in thousands)	Fatalities per 100,000 employed ²	Relative standard error ³
	Number	Percent			
Total	6,023	100	134,666	4.5	.1
Employee status					
Wage and salary workers	4,884	81	124,445	3.9	.2
Self-employed	1,139	19	10,221	11.1	1.1
Gender					
Men	5,582	93	72,457	7.7	.3
Women	441	7	62,209	0.7	.4
Age					
Under 16 years	26	--	--	--	--
16 to 17 years	46	1	2,796	1.6	2.1
18 to 19 years	122	2	4,494	2.7	1.7
20 to 24 years	450	7	13,242	3.4	.9
25 to 34 years	1,171	19	31,280	3.7	.6
35 to 44 years	1,499	25	36,983	4.1	.5
45 to 54 years	1,326	22	28,671	4.6	.6
55 to 64 years	814	14	13,317	6.1	.9
65 years and over	559	9	3,883	14.4	1.8
Unspecified	10	--	--	--	--
Race					
White	4,990	83	113,023	4.4	.2
Black or African American	626	10	15,284	4.1	.9
American Indian, Aleut, Eskimo	57	1	--	--	--
Asian, Pacific Islander	191	3	--	--	--
Other or not reported	159	3	--	--	--
Hispanic origin					
Hispanic	725	12	13,811	5.2	.9
Occupation					
Managerial and professional specialty occupations	597	10	40,467	1.5	.5
Executive, administrative, and managerial occupations	371	6	19,584	1.9	.8
Managers, marketing, advertising, and public relations	9	--	739	1.2	4.1
Managers, food serving and lodging establishments	73	1	1,489	4.9	2.9
Managers, properties and real estate	19	--	577	3.3	4.7
Management related occupations	44	1	4,879	0.9	1.6
Accountants and auditors	11	--	1,658	0.7	2.7
Professional specialty	226	4	20,883	1.1	.7
Engineers, architects, and surveyors	46	1	2,291	2.0	2.3

Number, percent, and rate of fatal occupational injuries by worker characteristics, occupation, and industry, 1999

Characteristic	Fatalities		Employed ¹ (in thousands)	Fatalities per 100,000 employed ²	Relative standard error ³
	Number	Percent			
Engineers	41	1	2,081	2.0	2.4
Civil engineers	11	--	287	3.8	6.6
Natural scientists	12	--	578	2.1	4.7
Health diagnosing occupations	12	--	1,071	1.1	3.4
Health assessment and treating occupations	35	1	3,019	1.2	2.0
Registered nurses	19	--	2,128	0.9	2.4
Teachers, post-secondary	10	--	978	1.0	3.6
Teachers, except post-secondary	29	--	5,277	0.5	1.5
Social, recreation, and religious workers	18	--	1,435	1.3	3.0
Social workers	8	--	813	1.0	3.9
Lawyers and judges	13	--	964	1.3	3.6
Lawyers	13	--	923	1.4	3.7
Writers, artists, entertainers, and athletes	43	1	2,454	1.8	2.3
Athletes	19	--	110	17.3	10.7
Technical, sales, and administrative support occupations	610	10	38,921	1.6	.5
Technicians and related support occupations	158	3	4,355	3.6	1.7
Health technologists and technicians	17	--	1,701	1.0	2.7
Engineering and related technologists, technicians	22	--	973	2.3	3.6
Electrical and electronic technicians	11	--	437	2.5	5.4
Technicians, except health, engineering and science	113	2	1,388	8.1	3.0
Airplane pilots and navigators	94	2	143	65.7	9.4
Sales occupations	356	6	16,118	2.2	.8
Supervisors and proprietors, sales occupations	140	2	4,896	2.9	1.6
Sales representatives, finance and business services	39	1	2,735	1.4	2.1
Sales representatives, commodities except retail	27	--	1,526	1.8	2.9
Sales workers, retail and personal services	144	2	6,866	2.1	1.3
Sales counter clerks	12	--	198	6.1	8.0
Cashiers	55	1	3,014	1.8	2.0
News vendors	15	--	101	14.9	11.2
Administrative support occupations, including clerical	96	2	18,448	0.5	.8
Mail and message distributing occupations	30	--	990	3.0	3.6
Mail carriers, postal service	12	--	332	3.6	6.2
Messengers	17	--	151	11.3	9.1
Material recording, scheduling, and distributing clerks	19	--	1,959	1.0	2.5
Miscellaneous administrative support occupations	12	--	3,616	0.3	1.8
Service occupations	468	8	17,915	2.6	.8
Protective service occupations	261	4	2,440	10.7	2.3
Fire fighting, prevention jobs, including supervisors	57	1	280	20.4	6.7
Police and detectives, including supervisors	132	2	1,204	11.0	3.2
Guards, including supervisors	72	1	955	7.5	3.6
Service occupations, except protective and household	203	3	14,644	1.4	.9
Food preparation and service occupations	66	1	6,091	1.1	1.4
Bartenders	12	--	316	3.8	6.3
Waiters and waitresses	7	--	1,431	0.5	3.0
Cooks	19	--	2,078	0.9	2.4
Health service occupations	17	--	2,521	0.7	2.2
Cleaning and building service occupations, except household	81	1	3,021	2.7	2.0
Janitors and cleaners	64	1	2,118	3.0	2.4
Personal service occupations	39	1	3,011	1.3	2.0
Farming, forestry, and fishing occupations	897	15	3,426	26.2	1.9
Farm occupations--comprises the 4 jobs below with asterisks.	557	9	1,856	30.0	2.6
Farm operators and managers	362	6	1,134	31.9	3.3
Farmers, except horticultural *	233	4	900	25.9	3.7
Managers, farms, except horticultural *	118	2	146	80.8	9.3
Other agricultural and related occupations	335	5	2,135	15.7	2.4
Farm occupations, except managerial	211	3	845	25.0	3.9

Number, percent, and rate of fatal occupational injuries by worker characteristics, occupation, and industry, 1999

Characteristic	Fatalities		Employed ¹ (in thousands)	Fatalities per 100,000 employed ²	Relative standard error ³
	Number	Percent			
Supervisors, farm workers *	7	--	53	13.2	15.4
Farm workers *	199	3	757	26.3	4.1
Related agricultural occupations	124	2	1,289	9.6	3.1
Supervisors, related agricultural occupations	8	--	164	4.9	8.8
Groundskeepers and gardeners, except farm	106	2	943	11.2	3.6
Forestry and logging occupations	122	2	107	114.0	10.9
Timber cutters	114	2	88	129.5	12.0
Supervisors, forestry and logging workers	12	--	22	54.5	23.9
Timber cutting and logging occupations	102	2	66	154.5	13.8
Fishers, hunters, and trappers	78	1	50	156.0	15.9
Fishers, including vessel captains and officers	78	1	48	162.5	16.2
Precision production, craft, and repair occupations	1,142	19	14,593	7.8	.9
Mechanics and repairers	353	6	4,868	7.3	1.6
Supervisors, mechanics and repairers	22	--	264	8.3	6.9
Mechanics and repairers, except supervisors	331	5	4,604	7.2	1.6
Vehicle and mobile equipment mechanics and repairers	157	3	1,768	8.9	2.7
Automobile mechanics	48	1	837	5.7	3.9
Bus, truck, and stationary engine mechanics	39	1	330	11.8	6.2
Automobile body and related repairers	9	--	167	5.4	8.7
Heavy equipment mechanics	43	1	160	26.9	8.9
Industrial machinery repairers	27	--	570	4.7	4.7
Electrical and electronic equipment repairers	42	1	966	4.3	3.6
Electronic repairers, communications, industrial equipment	20	--	217	9.2	7.6
Heating, air conditioning, and refrigeration mechanics	24	--	357	6.7	5.9
Miscellaneous mechanics and repairers	74	1	927	8.0	3.7
Construction trades	633	10	5,801	10.9	1.4
Supervisors, construction occupations	91	2	817	11.1	3.9
Construction trades, except supervisors	539	9	4,985	10.8	1.6
Brickmasons and stonemasons	21	--	197	10.7	8.0
Carpenters	103	2	1,398	7.4	3.0
Electricians	105	2	834	12.6	3.9
Electrical power installers and repairers	34	1	134	25.4	9.7
Painters, construction and maintenance	38	1	603	6.3	4.6
Plumbers, pipefitters and steamfitters	39	1	540	7.2	4.8
Roofers	59	1	214	27.6	7.7
Structural metal workers	43	1	71	60.6	13.3
Extractive occupations	47	1	130	36.2	9.8
Mining machine operators	20	--	36	55.6	18.7
Precision production occupations	109	2	3,793	2.9	1.8
Supervisors, production occupations	43	1	1,160	3.7	3.3
Precision metal working occupations	38	1	928	4.1	3.7
Machinists	16	--	515	3.1	4.9
Plant and systems operators	15	--	248	6.0	7.1
Operators, fabricators, and laborers	2,194	36	18,167	12.1	.8
Machine operators, assemblers, and inspectors	216	4	7,386	2.9	1.3
Machine operators and tenders, except precision	125	2	4,675	2.7	1.6
Metal working, plastic working machine operators	11	--	376	2.9	5.8
Machine operators, assorted materials	89	1	2,757	3.2	2.1
Fabricators, assemblers, and hand working occupations	82	1	1,995	4.1	2.5
Welders and cutters	67	1	571	11.7	4.7
Assemblers	12	--	1,246	1.0	3.2
Production inspectors, testers, samplers, and weighers	9	--	716	1.3	4.2
Transportation and material moving occupations	1,320	22	5,516	23.9	1.5
Motor vehicle operators	1,063	18	4,202	25.3	1.7
Truck drivers	898	15	3,116	28.8	2.0
Drivers-sales workers	42	1	160	26.3	8.9

Number, percent, and rate of fatal occupational injuries by worker characteristics, occupation, and industry, 1999

Characteristic	Fatalities		Employed ¹ (in thousands)	Fatalities per 100,000 employed ²	Relative standard error ³
	Number	Percent			
Bus drivers	36	1	490	7.3	5.1
Taxicab drivers and chauffeurs	74	1	271	27.3	6.8
Transportation occupations, except motor vehicles	52	1	163	31.9	8.8
Rail transportation occupations	24	--	106	22.6	10.9
Railroad brake, signal, and switch operators	6	--	9	66.7	37.4
Water transportation occupations	28	--	57	49.1	14.9
Ship captains and mates, except fishing boats	12	--	31	38.7	20.2
Sailors and deckhands	15	--	16	93.8	28.1
Material moving equipment operators	205	3	1,152	17.8	3.3
Operating engineers	57	1	236	24.2	7.3
Crane and tower operators	14	--	74	18.9	13.1
Excavating and loading machine operators	21	--	105	20.0	11.0
Grader, dozer, and scraper operators	26	--	73	35.6	13.1
Industrial truck and tractor equipment operators	56	1	544	10.3	4.8
Handlers, equipment cleaners, helpers, and laborers	658	11	5,265	12.5	1.5
Helpers, construction and extractive occupations	15	--	112	13.4	10.6
Construction laborers	341	6	920	37.1	3.7
Freight, stock, and material handlers	65	1	2,060	3.2	2.5
Garbage collectors	19	--	55	34.5	15.1
Stock handlers and baggers	12	--	1,172	1.0	3.3
Garage and service station related occupations	14	--	195	7.2	8.0
Vehicle washers and equipment cleaners	14	--	280	5.0	6.7
Laborers, except construction	193	3	1,286	15.0	3.1
Military	80	1	1,178	6.8	3.3
Other or not reported	35	1	--	--	--
Industry					
Private industry	5,461	90	114,570	4.8	.2
Agriculture, forestry, and fishing	807	13	3,349	24.1	1.9
Agricultural production, crops	350	6	955	36.6	3.6
Agricultural production, livestock	163	3	993	16.4	3.6
Agricultural services	164	3	1,317	12.5	3.1
Landscape and horticultural services	107	2	918	11.7	3.7
Fishing, hunting, and trapping	81	1	54	150.0	15.3
Mining	121	2	562	21.5	4.7
Metal mining	12	--	40	30.0	17.8
Coal mining	35	1	84	41.7	12.3
Oil and gas extraction	50	1	329	15.2	6.2
Construction	1,190	20	8,479	14.0	1.2
Manufacturing	719	12	19,994	3.6	.7
Food and kindred products	83	1	1,643	5.1	2.8
Meat products	25	--	474	5.3	5.2
Grain mill products	11	--	147	7.5	9.3
Lumber and wood products	190	3	824	23.1	3.9
Logging	138	2	126	109.5	10.0
Sawmills and planing mills	21	--	429	4.9	5.4
Paper and allied products	27	--	639	4.2	4.4
Printing and publishing	25	--	1,790	1.4	2.6
Newspapers	14	--	528	2.7	4.9
Chemicals and allied products	47	1	1,228	3.8	3.2
Rubber and miscellaneous plastics products	19	--	889	2.1	3.8
Stone, clay, and glass products	44	1	628	7.0	4.5
Concrete, gypsum, and plaster products	34	1	222	15.3	7.5
Primary metal industries	50	1	760	6.6	4.1

Number, percent, and rate of fatal occupational injuries by worker characteristics, occupation, and industry, 1999

Characteristic	Fatalities		Employed ¹ (in thousands)	Fatalities per 100,000 employed ²	Relative standard error ³
	Number	Percent			
Blast furnace and basic steel products	18	--	299	6.0	6.5
Fabricated metal products	46	1	1,281	3.6	3.1
Fabricated structural metal products	21	--	529	4.0	4.9
Industrial machinery and equipment	54	1	2,436	2.2	2.3
Construction and related machinery	17	--	236	7.2	7.3
Transportation equipment	68	1	2,300	3.0	2.3
Motor vehicles and equipment	33	1	1,321	2.5	3.1
Ship and boat building and repairing	20	--	169	11.8	8.6
Transportation and public utilities	1,006	17	7,947	12.7	1.2
Railroad transportation	32	1	276	11.6	6.8
Local and interurban passenger transit	102	2	593	17.2	4.6
Taxicabs	66	1	149	44.3	9.2
Trucking and warehousing	605	10	2,679	22.6	2.2
Trucking and courier services, except air	562	9	2,505	22.4	2.2
Public warehousing and storage	21	--	174	12.1	8.5
Water transportation	55	1	210	26.2	7.7
Transportation by air	74	1	864	8.6	3.8
Transportation services	21	--	411	5.1	5.5
Communications	30	--	1,873	1.6	2.6
Telephone communications	18	--	1,395	1.3	3.0
Electric, gas, and sanitary services	86	1	1,029	8.4	3.5
Electric services	24	--	500	4.8	5.0
Sanitary services	45	1	149	30.2	9.2
Wholesale trade	237	4	5,173	4.6	1.5
Wholesale trade, durable goods	132	2	2,830	4.7	2.1
Motor vehicles, parts, and supplies	23	--	238	9.7	7.3
Lumber and construction materials	12	--	229	5.2	7.4
Machinery, equipment, and supplies	28	--	709	3.9	4.2
Wholesale trade, nondurable goods	105	2	2,343	4.5	2.3
Groceries and related products	44	1	940	4.7	3.7
Farm-product raw materials	10	--	84	11.9	12.3
Petroleum and petroleum products	16	--	131	12.2	9.8
Retail trade	507	8	22,300	2.3	.7
Building materials and garden supplies	29	--	990	2.9	3.6
Lumber and other building materials	19	--	644	3.0	4.4
General merchandise stores	24	--	2,564	0.9	2.2
Food stores	115	2	3,511	3.3	1.9
Grocery stores	94	2	3,047	3.1	2.0
Automotive dealers and service stations	82	1	2,238	3.7	2.4
New and used car dealers	14	--	1,232	1.1	3.2
Auto and home supply stores	22	--	485	4.5	5.1
Gasoline service stations	28	--	377	7.4	5.8
Furniture and homefurnishings stores	16	--	1,363	1.2	3.0
Eating and drinking places	145	2	6,718	2.2	1.3
Miscellaneous retail stores	91	2	1,030	8.8	3.5
Liquor stores	20	--	138	14.5	9.6
Nonstore retailers	19	--	647	2.9	4.4
Direct selling establishments	16	--	395	4.1	5.6
Finance, insurance, and real estate	105	2	8,610	1.2	1.2
Depository institutions	13	--	2,149	0.6	2.4
Insurance carriers	10	--	2,473	0.4	2.2
Real estate	48	1	2,187	2.2	2.4
Services	732	12	38,240	1.9	.5
Hotels and other lodging places	37	1	1,531	2.4	2.9
Hotels and motels	29	--	1,381	2.1	3.0
Business services	161	3	67,565	0.2	.3

Number, percent, and rate of fatal occupational injuries by worker characteristics, occupation, and industry, 1999

Characteristic	Fatalities		Employed ¹ (in thousands)	Fatalities per 100,000 employed ²	Relative standard error ³
	Number	Percent			
Advertising	9	--	283	3.2	6.7
Services to buildings	30	--	814	3.7	3.9
Personnel supply services	23	--	1,050	2.2	3.5
Detective and armored car services	39	1	587	6.6	4.6
Auto repair, services, and parking	132	2	1,576	8.4	2.8
Automotive repair shops	82	1	1,149	7.1	3.3
Miscellaneous repair services	53	1	652	8.1	4.4
Electrical repair shops	14	--	113	12.4	10.6
Government	562	9	20,096	2.8	.7
Federal	147	2	4,427	3.3	1.7
State	108	2	5,237	2.1	1.5
Local	301	5	10,433	2.9	1.1

¹ The employment figures, except for military, are annual average estimates of employed civilians, 16 years of age and older, from the Current Population Survey (CPS), 1999. The resident military figure, obtained from the Department of Defense, was added to the CPS employment total.

² The rate represents the number of fatal occupational injuries per 100,000 employed workers and was calculated as follows: $(N/W) \times 100,000$, where N = the number of fatal work injuries, and W = the number of employed workers. There were 26 fatally injured workers under the age of 16 years that were not included in the rate calculations to maintain consistency with the CPS employment.

³ The relative standard errors of the CPS employment estimates can be used to approximate confidence ranges for the fatality rates. For example, a confidence range for the roofers rate can be approximated as follows: $27.6 \times .077 \times 1.6 = 3.4$, where 27.6 = the rate, .077 = the relative standard error (7.7 percent), and 1.6 = the factor for a 90 percent confidence level. The confidence range for this rate is 24.2 to 31.0 (27.6 plus or minus 3.4).

NOTE: Selected rate categories had 5 or more work injury fatalities in 1999. Dashes indicate data not available or less than .5 percent. Totals for major categories may include subcategories not shown separately. Figures may not add to totals because of rounding.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, Census of Fatal Occupational Injuries, 1999

1999 CENSUS OF FATAL OCCUPATIONAL INJURIES

Experimental National Fatality Rates Technical Notes

Fatality rates are used to compare the risk of incurring a fatal work injury among worker groups with varying employment. Since employment data are not collected by the Census of Fatal Occupational Injuries (CFOI), experimental fatality rates were calculated using estimates of employed civilian workers (age 16 and older) from the Current Population Survey (CPS). Resident military figures, obtained from the Department of Defense (DoD), were added to the CPS employment totals. To maintain statistical consistency, fatalities to workers under the age of 16 were excluded from all rate calculations.

Fatality rates were calculated as follows:

Rate = (N/W) 100,000, where

Rate = the estimated number of fatalities per 100,000 workers

N = the number of work-related fatalities, age 16 and over (1999 CFOI)

W = the annual average number of employed civilians and resident military, age 16 and over (1999 CPS, DoD)

Thus, in 1999, there were 6,023 fatalities according to CFOI. Of these, 5,997 occurred to workers 16 or older. Employment estimates from the CPS for 1999 were 133,488,000; added to the resident military employment figure of 1,178,000 from the Department of Defense, total employment was 134,666,000 in 1999:

Rate = (N/W) 100,000

R = (5,997/134,666,000) 100,000

R = 4.5 fatalities per 100,000 workers

There are a number of limitations to these experimental fatality rates:

- The CPS employment data used to calculate rates are estimates based upon a sample rather than a complete count. Therefore, the CPS estimates and fatality rates have sampling errors. The figures obtained for the rates may differ from the figures that would have been obtained if it had been possible to take a census of employed persons. See "Explanatory notes and Estimates of Error" in the January 2000 *Employment and Earnings* for an explanation of CPS sampling and estimation methodology, and standard error computations. The relative standard errors of the CPS employment estimates can be used to approximate confidence ranges for the fatality rates.
- The CPS categorizes workers among industries according to their primary job, which may differ from the job held when fatally injured. The Census of Fatal Occupational Injuries categorizes decedents into the industry worked at the time of the fatal incident, including a second job or seasonal work.
- The rates here were based on employment; employment-based rate measures the risk for those employed during a given period of time, regardless of hours worked. Another method of calculating a rate is to use an hours-based rate, which measures fatality risk per standardized length of exposure. Hours-based rates are generally considered more accurate. However, because of limitations in the availability of data for hours worked, these experimental fatality rates are employment based.